SECTION 32 17 28

TRAFFIC BARRIERS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Thrie beam metal guardrail.

B. W Beam metal guardrail.

C. Transition traffic barrier

D. Concrete barriers with chain link fencing.

1.02 RELATED SECTIONS

A. Chain link fencing is specified in Section 32 31 13, Chain Link Fences and Gates.

B. Concrete formwork, concrete reinforcement, cast-in-place concrete, portland cement concrete, expansion joints, and curing and finishing of concrete are specified in applicable Sections under Division 3, Concrete.

1.03 MEASUREMENT AND PAYMENT

A. General: Measurement and payment for traffic barriers will be either by the lump sum method or by the unit price method as determined by the listing of the bid item for traffic barriers indicated in the Bid Schedule of the Bid Form.

B. Lump sum: If the Bid Schedule indicates a lump sum for traffic barriers, the lump sum method of measurement and payment will be in accordance with Section 01 20 00, Price and Payment Procedures, Article 1.03.

C. Unit Price: If the Bid Schedule indicates a unit price for traffic barriers, the unit price method of measurement and payment will be as follows:

1. Measurement:

a. Type A and Type B Traffic Barriers:

1) Traffic barriers will be measured for payment by the linear foot complete in place, measured from end to end of the metal beam rail, including off-sets and end sections.

2) Earthwork, concrete, posts, fasteners, and accessories for the traffic barriers will not be measured separately for payment. All costs in connection therewith will be considered as included in the linear foot measurement of traffic barriers.

b. Type C and D Traffic Barriers:

1) Traffic barriers will be measured for payment by the linear foot, constructed complete in place, measured along the centerline of the barrier.

2) Earthwork, reinforcing steel and concrete, dowels, expansion joint filler, chain link fence, and electrical grounding will not be measured separately for payment. All costs in connection therewith will be considered as included in the linear foot measurement of the traffic barriers.

2. Payment: Traffic barriers will be paid for at the indicated Contract unit prices for the computed quantities as determined by the measurement method specified in Article 1.03.C.1.

1.04 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO M180 Corrugated Sheet Steel Beams for Highway Guard Rail

B. American Society for Testing and Materials (ASTM):

1. ASTM A153 Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

2. ASTM A307 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile

3. ASTM A563 Specification for Carbon and Alloy Steel Nuts

4. ASTM A780 Practice for Repair of Damaged Hot-Dip Galvanized Coatings

5. ASTM C33 Specification for Concrete Aggregates

C. State of California, Department of Transportation (Caltrans) Standard Specifications:

1. Section 58 Preservative Treatment of Lumber, Timber and Piling

2. Section 83 Railings and Barriers

D. West Coast Lumber Inspection Bureau (WCLIB): Standard Grading and Dressing Rules No. 17

1.05 SUBMITTALS

A. General: Refer to Section 01 33 00, Submittal Procedures, and Section 01 33 23, Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.

B. Shop Drawings:

1. Submit shop drawings of beam-type traffic barrier and all its components. Refer to AASHTO M180 for example requirements.

2. Submit shop drawings of concrete barrier and all its components. Include locations of expansion and contraction joints.

PART 2 – PRODUCTS

2.01 TYPE A AND B TRAFFIC BARRIERS

A. Posts: Douglas fir, "No. 1 Structural" - Post and Timbers in accordance with WCLIB Standard Grading and Dressing Rules No. 17, of sizes indicated, 25 percent maximum moisture content, pressure-treated in accordance with Sections 58 and 83 of the Caltrans Standard Specifications.

B. Rail Components: AASHTO M180, Type II, Class A. Provide W Beam or Thrie Beam as indicated. Include beam, transition, end, and buffer sections as required for complete and finished installations.

C. Bolts, Nuts, and Washers: ASTM A307 and A563, as applicable, galvanized in accordance with ASTM A153.

D. Concrete for Post Foundations: Regular concrete, weighing approximately 145 pounds per cubic foot, with a minimum compressive strength at 28 days of 3,000 psi. Maximum aggregate size: 1-inch (ASTM C33, Sizes Nos. 56 or 57). Maximum slump: 4 inches.

E. Fabrication:

1. Shop fabricate all metalwork. Do not punch, cut, or weld in the field. Where holes are required to be made in the field, drill such holes.

2. Holes shall be slotted as necessary to provide for expansion and contraction and to facilitate erection.

3. Galvanize components of bolted assemblies separately before assembly. When necessary to bend or straighten sections after galvanizing, perform such work without damage to the zinc coating.

4. Galvanized coatings that are damaged by fabrication or assembly, including punching and drilling of holes, shall be restored by field cold galvanizing or galvanizing repair in accordance with ASTM A780.

2.02 TYPE C AND D TRAFFIC BARRIERS

A. Formwork: Comply with applicable requirements of Section 03 11 00, Concrete Forming. Provide forms that will produce "smooth form finish" as specified in Section 03 35 00, Concrete Finishing.

B. Reinforcing Steel: Comply with applicable requirements of Section 03 20 00, Concrete Reinforcing. Dowels shall be smooth steel bars or rods as indicated.

C. Expansion Joint Filler: Comply with applicable requirements of Section 03 15 00, Concrete Accessories.

D. Cast-In-Place Concrete: Comply with applicable requirements of Section 03 30 00, Cast-In-Place Concrete.

E. Portland Cement Concrete: Comply with applicable requirements of Section 03 05 15, Portland Cement Concrete. Provide Class 3000 concrete, unless otherwise indicated.

F. Concrete Repair, Curing, and Finishing: Repair of surface defects, curing, and finishing of concrete shall conform with applicable requirements of Section 03 35 00, Concrete Finishing. Provide "smooth form finish." Curing may be by curing compound.

G. Chain Link Fence: Comply with applicable requirements of Section 32 31 13, Chain Link Fences and Gates. Provide Type CL-4WV fence. Provide galvanized pipe sleeves and high-strength non-shrink grout for anchoring fence posts in concrete.

PART 3 – EXECUTION

3.01 INSTALLATION OF TYPE A AND B TRAFFIC BARRIERS

A. Posts:

1. Set posts accurately to line and grade in drilled or dug postholes. Clean sand bedding may be employed to adjust posthole depth to proper post height. make posthole diameter approximately 16 inches greater than the diameter of the post, and if rock is encountered, remove it in sufficient volume to provide eight inches of backfill completely around the post.

2. When post driving is authorized by the Engineer, set posts in drilled holes the diameters of which are slightly smaller than the diameters of the posts. Drive posts plumb to proper line and grade by an acceptable method that will not damage the post or post finish. Remove and replace posts damaged or distorted by driving.

3. After post installation, backfill postholes with concrete to approximately 12 inches from top of hole, and backfill the balance of the hole with structure backfill material, well compacted after initial concrete set.

4. Where posts will be set in areas of proposed bituminous concrete surfacing, install posts prior to laying the surrounding finished surface.

B. Rail Components:

1. Erect rail components true to line and grade and to dimensions indicated. Do not finally tighten bolts until the rail lengths or sections have been properly adjusted. The use of corrosion-resistant shims, for minor adjustment, will be permitted.

2. Erect rail so as to form a smooth continuous rail. Splice rail by lapping in the direction of traffic. Rail shall make full contact at each splice.

3. Draw bolts tight except at expansion joints. At expansion joints, draw bolts as tightly as possible without preventing rail elements from sliding past each other longitudinally.

C. Repair of Damaged Surfaces: Repair damaged galvanized surfaces in accordance with ASTM A780 as hereinbefore specified under "Fabrication."

3.02 CONSTRUCTION OF TYPE C AND TYPE D TRAFFIC BARRIERS

A. Provide excavation, sub grade preparation, backfill, and compaction as indicated and required to complete the Work in accordance with applicable requirements of Section 31 00 00, Earthwork.

B. Provide concrete traffic barriers constructed to configuration indicated. Comply with requirements herein specified under Article 2.02.

C. Install chain link fence and barbed wire as indicated and in accordance with applicable requirements of Section 32 31 13, Chain Link Fences and Gates.

END OF SECTION 32 17 28